Statement of Work for:
COMM 2 Controller Integration
AFRC-COM-02-001
October 15, 2015

I. Scope of Work

The Research Facilities & Engineering Support Services (RF&ESS) contractor prepared this Statement of Work (SOW) on behalf of the National Aeronautics and Space Administration (NASA) at the Armstrong Flight Research Center (AFRC).

This document covers the SOW for COMM 2 Controller Integration. This will be utilized by the NASA AFRC Communications Facility as the COMM 2 UHF high-gain transceiving system for support of missions requiring high-gain communications, such as Human Space Flight Low Earth Orbiting Vehicles and long range aeronautical research missions. This SOW document is for the integration of the following Government Furnished Equipment (GFE): Tecom Pedestal including the Three (3) Channel Rotary Joint, Telemetry & Communications Systems (TCS) Inc., Antenna Control Unit (ACU)-M1 with Linux OS, TCS Pedestal Interface Unit (PIU) enclosure, TCS Azimuth and Elevation Servo Amplifier/Power Supply/Motor System (aka servo drive system) and TCS Datapack Assembly. This SOW document is also for the integration of a vendor supplied Camera System. The Camera System shall be a NTSC 36X camera with a focal length of 3.3 millimeters to 119 millimeters with automatic and manual zoom and focus. Hereafter in this document these integrated systems will be referred to as the COMM 2 Controller Integration. The COMM 2 Controller Integration is operated in adverse environmental conditions and is used for mission critical applications and therefore it must be highly reliable.

II. Applicable Document

The attached COMM 2 Controller Integration Requirements Document, AFRC-COM-02-001, contains detailed requirements for the COMM 2 Controller Integration and is the superseding compliance document.

III. Technical Point of Contacts

Robert Jones
Justin Thomas
Richard Batchelor
Tim Miller

IV. Specific Task Requirements

COMM 2 Controller Integration

The following GFE hardware shall be integrated at the vendor's facility for the COMM 2 Controller Integration:

a. Tecom Pedestal including the Three (3) Channel Rotary Joint (P/N 204699, S/N 001, and ECN 1810980)

b. TCS ACU-M1 Antenna Controller with Linux OS (P/N 300110-J1071)

c. TCS PIU (P/N 111710-01, S/N P1003)

d. TCS Azimuth Servo Drive System (P/N 304469-02)

e. TCS Elevation Servo Drive System (P/N 304469-02)

f. TCS Datapack Assembly (P/N 308566-01)

The vendor shall supply the following:

a. Upgrade the GFE ACU-M1 Antenna Controller hardware, firmware, software to the most current revision and integrate with the GFE Linux OS. The GUI shall be configured to meet NASA AFRC requirements.

b. The GFE PIU assembly shall be upgraded and repackaged to bring the PIU up to the latest revision of hardware and firmware. The PIU / Servo Drive Systems shall be packaged in a vendor supplied enclosure, which must be mounted inside of the equipment rack (W= 19", Depth= 24", Height= 36") inside the pedestal on Building 4824 at NASA AFRC.

c. A 44-ring slip ring package capable of supporting the COMM 2 Controller Integration requirements.

d. A NTSC video 36X camera mounted and integrated to the Tecom GFE Pedestal. The camera shall have a focal length of 3.3 millimeters to 119 millimeters with zoom and focus lens controllable from the TCS ACU-M1 GUI. The video signal shall be converted from copper to fiber and sent to the ACU-M1.

e. Provide system integration, including cabling and hardware between the GFE Pedestal including the 3 Channel Rotary Joint, GFE Servo Drive System, Camera System, Slip Ring assembly, Datapack Assembly, and all the pedestal connections, data packs, limit switches, encoders/synchros, brake release switches, interlock switches, etc.

f. System documentation including packing slip (list of delivered items), invoice, and certificate of compliance, drawings, system description, parts lists, recommended spares, Acceptance Test Procedure (ATP), and other information required to maintain the system.

g. The vendor shall provide a means to remotely control the T-Head servo system using a control box connected to the PIU. The control box cable shall be a minimum of 50 feet in length.

If the vendor's facility is more than 200 miles from NASA AFRC, the vendor shall provide shipping of the GFE to and from their location for the COMM 2 Controller Integration factory integration. The shipping cost shall be provided in the vendor's proposal. If the vendor's facility is less than 200 miles from NASA AFRC, then NASA will provide shipping to and from NASA AFRC.

V. Period of Performance

The vendor shall meet the delivery schedule specified in the key milestones specified below. Failure to meet a key milestone may result in contract cancellation at no additional cost to the purchaser.

Key Milestones

V.1.1 COMM 2 Controller Integration Completion – 7 months ARO

V.1.2 COMM 2 Controller Integration Partial ATP – 7 months ARO

V.1.3 NASA AFRC on-site Integration and ATP – 8 months ARO

VI. Deliverables

Certificate of Conformance

The vendor shall deliver a certificate of conformance along with the delivery of the COMM 2 Controller Integration.

Documentation

The vendor shall deliver all required documentation to NASA electronically to include two copies of user manuals or other documents including schematics, drawings, photographs, etc. to enable NASA and NASA personnel to perform field level maintenance of the COMM 2 Controller Integration system

VII. Evaluation Criteria

- Proposal must be submitted in three separate binders. One for each area listed below. Cost MUST not be included in either the technical or past performance proposals. Failure to comply will result in automatic elimination.
- Technical - 60%
- Cost - 20%
- Past Performance - 20%
- On-site evaluation MAY be required. If required, you will have ten days upon notification to ship the equipment to our destination for evaluation and use to ensure it does meet all requirements and is compatible. After a 15 day on-site evaluation the equipment will be returned. The cost and shipping to and from NASA Armstrong will be at the expense at the company proposes their product.

VIII. Acceptance Criteria

The COMM 2 Controller Integration vendor shall successfully perform factory and on site (NASA AFRC) ATP of the GFE and vendor supplied components.

The vendor shall electronically deliver to NASA, for review, the factory ATP documentation for the COMM 2 Controller Integration, a minimum of one week in advance of the planned factory ATP. The vendor shall provide a minimum of one week's notice to NASA prior to vendor's factory ATP. NASA personnel will review and provide feedback on the factory ATP documentation prior to the factory ATP being performed. NASA personnel will witness, verify, approve, and sign off on the factory ATP. The onsite ATP shall be conducted at NASA AFRC Building 4824 once assembly and installation is complete. The vendor shall deliver to NASA, for review, detailed customer on-site ATP documentation a minimum of one week prior to the customer on-site ATP. The vendor shall perform an on-site ATP of all the GFE and vendor supplied associated hardware and software. NASA personnel will witness, verify, approve, and sign off on the on-site ATP. The vendor's work shall result in an operational system that meets or exceeds NASA AFRC's requirements and specifications

IX. Contractor/Government Furnished Property/Government Furnished Equipment

a. Tecom Pedestal including Three (3) Channel Rotary Joint (P/N 204699, S/N 001, and ECN 1810980)
b. TCS ACU-M1 antenna controller (P/N 300110-J1071) with Linux OS
c. TCS PIU (P/N 111710-01, S/N P1003)
d. TCS Azimuth Servo Drive System (P/N 304469-02)
e. TCS Elevation Servo Drive System (P/N 304469-02)
f. TCS Datapack Assembly (P/N 308566-01)

X. Special Considerations

N/A

XI. Security Requirements

a. All IT Systems sold in the United States will receive their final assembly and test in the USA. Certified Documentation is required per Consolidated and Further Continuing Appropriations Act, 2013 H.R. 933-76, SEC. 516 and H.R. 933-80 SEC. 535.

b. All personnel traveling to NASA Armstrong Flight Research Center located on Edwards Air Force Base for site survey, installation, testing, and training shall be U.S. Citizens badged in accordance with NASA procedures.